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THOS. H. McCOLLIN, Managing Editor.

JULIUS F. SACHSE, Editor.

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WHY BUSINESS IS DULL WITH SOME PHOTOGRAPHERS.

BY JULIUS F. SACHSE.

AMONG professional photographers the question is frequently asked, "What makes business so dull?" During the early spring, when the dull, rainy weather prevailed, the stagnation was universal and easily to be accounted for; the blame was laid to causes beyond human control, and justly so. But with the change of seasons came the clear days, with a good light and balmy spring weather, crowding our thoroughfares with pedestrians and shoppers, which naturally had a good effect upon the professional photographer. Yet while this improved condition of affairs gladdened the hearts of many by a rush of business, and brought money to their purses, there are others who still wear long faces, while they pace their empty studios and wonder where the money is to come from to pay their idle hands and accumulating bills. It is this latter class who find consolation by blaming the advent of the amateur photographer for the stagnation, and end by heaping maledictions upon his head.

Now there is always a cause for an effect; for instance, where two men are engaged in business, be it whatever it may, all circumstances being equal one will often prosper and make money,

while the other, with equal facilities, will fail. The question naturally arises, Why is this? The object of our paper is to try to solve this problem, from a commercial as well as a common-sense standpoint, with particular reference to a few facts which bear closely unto the professional photographer.

We will give the illustration from our own experience. A short time ago we were passing along one of the main streets of Philadelphia; within one of the most prominent blocks or squares there were probably half a dozen photographic studios. We went into one; the proprietor was old and skillful at the business, well known as prompt and reliable, and whose portraits a decade ago were held second to none in the City of Brotherly Love. After asking the time of day, we ventured the usual question as to business. The answer was that it was bad, worse this spring than ever; that he was making few or no new negatives, and if it were not for occasional duplicates from the thousands of his old negatives, he would have to close the gallery and go into another business. When asked how he accounted for this falling off of his business, the reply was (if we may be pardoned for the expression) the old, threadbare, wormy chestnut about the amateur and his first cousin, the Cheap John. He further ventured the opinion that photography as a business had gone to the dogs, and no one was making a living at it any more.

Now, as a matter of fact, we knew from our own knowledge that the competitor of this despondent camera adjuster, but a few doors above him, was a doing a good business, with a clientele increasing from day to day, and with orders far ahead of his capacity. This latter artist made no better pictures than the first-quoted operator, his facilities were no greater, his expenses much less, and his prices were even in advance of his older competitor. Yet the public passed the entrance of the old and formerly busy artist, as they hurried along the street, while at the entrance of the newer man they were apt to stop, enter, and patronize the latter.

Now the question naturally arises, Why is this? It is easily answered. The show-case of the older photographer, an old affair reaching from floor to ceiling, had been "fixed" a year or

two ago; cabinets, panels, boudoirs, with a few cartes, many from negatives made twenty years ago, had been crammed in the back promiscuously, without regard to subjects. It is true all the prints were fine specimens of his handiwork, and every mount had his name embossed in gold; yet the arrangement was without that taste or harmony which is apt to attract the eye of the passer-by; then the glass was dingy and the silver tarnished. It is true that the case was cleaned on the outside once a week, but the rest of the time it was left to shift for itself. No matter how dirty the glass was, Thursday was the cleaning day. The same rule applied to the vestibule and entrance. Every Monday it was wiped up, no matter what was the condition of the streets; the stairs were swept down every day, that was all. To return to the show-case, upon which everything depended to attract new trade, it is doubtful whether it had been opened for a year; and yet this photographer bewailed his ill luck, brought about by the falling off of new customers, and could not see why the general public flocked to his rival a few doors above.

Now how was it with his competitor? His show-case did not reach up to the ceiling, and was much smaller than the one just described. It did not contain a quarter of the specimens displayed in the former, but what were exhibited were tastefully arranged, so as to attract the eye of the passer. The proprietor also kept a boy expressly to keep the entrance and show-case clean. No matter how often in the day it was wiped off, it was always bright and clean inside and outside, while the specimens, always from negatives of the day, were frequently changed daily, so as to continually represent new faces to the regular passers. Especial care was also taken to make the entrance inviting and the vestibule attractive.

Here was a partial solution of the problem. In the first case it was the adhering to the old provincial methods of conducting business which were in vogue a quarter of a century ago. The result was a dwindling business and despondency.

In the other case, where modern business methods, such as an attractive entrance, with a clean, well-kept show-case, polite reception after the stranger enters, comfortable surroundings, con-

veniences for ladies and children, and modern accessories in the operating room, were coupled with good work at remunerative prices, the result was plenty of new sitters and a surplus of work, which swells the bank account of the intelligent proprietor.

At the present day, dingy studios, narrow, steep stairs, dirty, bad-smelling operating rooms, and dilapidated accessories are things to be avoided by the professional who wants to make money by his profession. The general public upon which he depends for patronage, are sure to avoid photographic fossils. It should also be borne in mind that what went in early wet-plate days and war times will not go now.

Why should not the same means applied by the successful merchant to insure success hold good with the photographer? What merchant, nowadays, crams his window full of goods promiscuously, then locks it up, and leaves it for a year or two without change, regardless of accumulated dirt upon the glass and exposed fabric, or the effect of the light upon the displayed samples, which plainly show to the passer-by how easily the goods fade and discolor; yet this is exactly the course which the average professional photographer pursues, and then wonders why his trade falls off.

What merchant displays summer goods in his window in mid-winter, or vice versa; yet look in the photographic show-case, and you will be surprised to see in how many the incongruity will appear.

Two cases in point. During the winter just past we stopped before the show-case of a leading photographer in an inland city; every group displayed was a summer scene, the most prominent being an 11 by 14 which showed a young lady in a décolleté dress without sleeves, in a boat accessory; a summer hat was upon her lap, and a tennis racket was placed in her hand as an oar.

Another case, on one of the main streets in Philadelphia, was where a photographer kept his show-case filled all summer with snow-storm and winter portraits, which had been fixed up before Christmas, and was then left to shift for itself.

Now what merchant would conduct his business in that manner? How the mercantile community at large has realized the importance of attracting the attention of the casual passer is shown by the fact that regular window-dressers are employed by all first-class establishments, whose aim it is to display as few goods as possible in the window, but to do it in such a manner that it attracts the attention of the public, and excites their interest enough to enter the establishment, and possibly become purchasers.

Interested parties will easily notice that frequent, if not daily, changes are made in these displays, so as to be noticeable to such as were attracted the day before. Another noteworthy fact is that an experienced window-dresser always tries to mass the effect upon the eye-line,—say about $4\frac{1}{2}$ to 5 feet from the footway of the street.

These same points hold good with the photographer. Nothing so soon becomes stale to the regular passers as a case of photographs, and nothing so quickly attracts their attention as a new face or picture, properly displayed.

Upon new sitters depends the success of the professional photographer. A stylishly dressed portrait often attracts dozens of lady passers, where one two seasons old would be passed by with a smile. The same holds good with child studies. No one can tell the age of a picture better than the average woman, no matter how good the portrait. A last season's bonnet or hat kills it all the time.

Let the photographic fossil who is not equal to the demands of modern times fix up his show-case with portraits from old negatives and celebrities taken two decades ago. He won't attract new custom; all he will have to depend upon will be a few duplicates. What cares the present generation for a picture of Edwin Cushman as "Metamora," or Charlotte Forrest as one of the witches in "Macbeth"? Nothing. It is, however, the other man, who keeps abreast with the times, and who has the faculty of displaying his specimens and attracting the general public, who has no time to growl about the hard times and dull business.

LIGHTING IN PORTRAITURE.

BY XANTHUS SMITH.

LIGHT and shadow is the soul of art. There is no higher expression of art than in fine sculpture ; and as the beauty of form in sculpture is developed by light and shadow only, and as light and shadow is the sole mode of expression of photography, we may, I think, be permitted to use sculpture as a basis from which to draw our comparisons and upon which to form our principles.

The sun, the great giver of light and of life, is also the great sculptor and painter. We poor mortals, admiring the infinite beauties which he constantly spreads before us, are ever in vain, trying to imitate them. To our perceptions, when the sun is doing its great work it is ever above us ; as it descends it becomes more feeble, till as it passes beneath the horizon, its work is done, on our half of this sphere, for the day. The objects which constitute nature, to our perceptions, are never lighted from beneath. Has nature purposely so designed her infinite creations that they may appear the most interesting by this lighting from above ? Or are we, through mere habit, so accustomed to it that we accept it as the right ? We think we may safely hold that the former is far the more likely, as in both animal and vegetable growths we universally see the greatest beauties of conformation and coloring upturned, as if thus to receive to the best advantage the descending rays of the glorious sun.

In the human countenance and its portrayal to the best advantage, which forms the theme of our present writing, we have the finest example of the influence of light and shadow in developing properly nature's finest work, if we adhere to what she has evidently pointed out as her intention. Let us take the features separately. The forehead, the seat of the highest intellectual qualities,—how can it be lighted to show its beautiful conformation but from above ? Then the eyes and eyebrows,—how else can we see their force and detail and brilliancy than by an upper

lighting? Take a fine nose and place a light beneath it, and what can you make of it? Of the mouth, chin, and cheeks,—nay, even the ear,—can we say aught else than that when lighted from underneath their individual interest is lost, and their beauty destroyed in place of being developed? How, then, taken as a whole, can we make anything but what we may almost call an absurdity of a human head under a false lighting?

Nothing is more easily and plainly exemplified than the unpleasant effect of ill lighting. Let the handsomest member of any family favored with average good looks (whether it be man or woman, old or young, it matters not) stand himself up at night, or in a darkened apartment, and let another member of the family take a good lamp and place it at any angle or in any position which he may choose with regard to the head and face of the individual posed, so that he always keep it below the level of the head; and let the other members of the family decide whether they would admire and value a picture of the one so seen under any of the varied aspects which he or she would present. I think we may safely say that in ninety-nine cases out of a hundred they would not.

The mode of studying the varied effects of light and shadow by a lamp placed in different positions with regard to the head and face, is a very simple and excellent one. It is open to all who feel sufficiently interested in art to give a few minutes to it, and exemplifies the wonderful effects of light and shadow in either the making or marring of a good human countenance.

It may be objected that this mode of lighting is too strong and too exaggerated (and so it would be for refined countenances) to be photographed. Of course we must then have a softer and more diffused light; but the principle is precisely the same, whether it be a soft or a powerful light. It must fall from the proper direction.

From centuries past to the present day, and notwithstanding the various whims and freaks of fashion, which, arising from a vulgar rage for novelty, are constantly assailing all well-founded truths, it has been the custom in academies and schools of art, and in all galleries purposely constructed for the display of

sculpture, to use a lighting that falls at an angle of forty-five degrees, or above, on the sculptures used as models to draw and paint from, and to be exhibited to the greatest advantage to intelligent people. What would we know of the solemn grandeur of the bust of Homer, or of the beauty of the head of the Apollo Belvidere, if we had never seen them properly lighted? How could we read the various characteristics of the Greek and Roman philosophers, statesmen, and rulers, as we do in the portrait sculptures that have come down to us, did we not have the power of casting a well-arranged lighting upon them?

The photographer may say, "What have we to do with Homers and Apollos and sculpture; are we not working from and catering to the flesh and blood of to-day?" But I say, Are we not men? Do we not furnish now as fine specimens of the human countenance as existed in the period of Greek art? Certainly. We have our great statesmen, generals, and philosophers, and alas! they are too often trusting to the camera alone for the perpetuation of their semblance. Possibly no mode can so truly convey to us as can the photographic art the actuality of a countenance. But we must never lose sight of the fact that that countenance, if it be the index to a mind worthy of perpetuation, must be portrayed under a lighting in conformity with the inscrutable laws of nature and of art.

We must beg to be pardoned if we speak strongly upon the importance of this matter of lighting in portraiture. During the past few days the subject has presented itself to us more forcibly than it probably has ever done before. One of our most distinguished citizens has just passed away. He stood amongst the few very highest in science of any time or country. Immediately we see large photographs of him placed in the windows of some of the photographers. They are splendid works as regards technique; but why should the noble face have been buried in shadow, a harsh line of light cutting down one edge only? Was it ignorance or thoughtlessness on the part of the person who posed this distinguished sitter? He surely had the means in his skylight of letting nature's illuminating rays fall broadly and truly upon this noble countenance, so that the grandeur and dig-

nity which it possessed might have been perpetuated to us to their full extent and value. Those photographers who profess to do only a respectable business should pay more attention than they do to this all-important subject, and we would admonish those who are at the head of leading galleries, and whose duty it daily becomes to affix the images of our greatest men of the day, that they are doing wrong in not making a regular art study of their pursuit. They should secure a few fine casts from the antique, preferably portrait busts, and study them and photograph them under various lightings; see how they may be made to look dignified or mean, grave or ridiculous.

You will, no doubt, think it a very easy matter to talk, and especially for one who knows little or nothing about the practical business of running a photographic gallery. There is no one better acquainted with the difficulty of producing a very fine photographic likeness than the writer. It is something which he is constantly striving to do, yet never satisfying himself; and, moreover, he is thoroughly acquainted with the trials to be contended with in catering to an uncultivated public. Our ideas upon the subject of art portraiture could not be put universally in practice. Ignorance and fashion cannot be stormed and annihilated. The mind must be led; good comes about gradually.

What we would have is that the portrait photographer properly and conscientiously prepare himself, as an artist does, for the work that is to be his calling, so that whenever an opportunity occurs to get in some real, good, artistic work he may do it. By artistic I do not mean what the whim of the day may call artistic, but artistic as founded upon the genuine high art of the past, and the rules of good taste and judgment that have stood the test of ages.

Let him, when a distinguished man with a fine forehead comes along, secure one or two admirable negatives of him. The man himself possibly may not like them so well as a commonplace portrait. Never mind; a fine work of art will have been put in existence. At a proper time it may be brought forth. If it should be engraved, it will be spread broadcast, and go down to posterity. When it is looked at in future years, by persons of

good taste and sound judgment, they cannot say of it, "What a pity the abominable fashion of shadow-pictures was in when that distinguished man was photographed," or "Pity he did not pose to one who had some artistic knowledge." But, on the contrary, they may say, "What a noble head; the man who posed it was truly an artist."

As to the practical details of lighting, all good photographers are pretty well provided with the means of securing almost any lighting which they may require. The main points to be looked after are to have plenty of height, not too much over-head light nor too much side light, and be very wary of any light below the level of the head. Perhaps the greatest difficulty in lighting is to secure the very nice point between too diffused and too concentrated a light. In too diffused a light we have a want of force and breadth of light and shadow, and consequently a want of expression and vigor in the head; and on the other hand, if the light be too much concentrated, there is a harshness and force of character which is not only less agreeable than when a softer light is used, but far less likely to make a portrait that will be as acceptable to the general run of sitters as the soft lighting.

The timing of the exposure is of the utmost importance. The correct limit is extremely narrow in the highly sensitive plates now used in portraiture. An under-exposed plate is worthless. If we over-expose we have a resulting flatness in the picture, which, if to be overcome, as it sometimes may, is only at a too great expenditure of time and pains to be admissible in gallery work.

In a properly lighted head, with correct exposure and development, in many instances very little retouching would be required. Certainly what constitute facial blemishes may in all cases be removed, but with persons of average good looks, as they advance in years, the stopping-out of all marks of time and character, and attempting to restore the look of youth, should be universally deprecated by persons of good sense.

ENERGETIC DEVELOPMENT WITHOUT DANGER OF FOG.¹

BY DR. A. MIETHE.

THROUGH long usage we have arrived at the conclusion that, as a matter of fact, all of our negatives are more or less affected with foggy veil of the film. Even if this condition does not always interfere with the copying properties of the negative, it nevertheless is a drawback, in so far that it unnecessarily lengthens the printing process. Then, again, a fogged negative requires a longer development, so that the lights may attain a sufficient density.

A large number of the commercial dry plates in ordinary use show a more or less dense fog when the usual energetic developers are used. Consequently when negatives clear in the shadows are required it necessitates an increase in the time of exposure, and the use of a developer strong with bromide.

For many purposes, like microphotographs, the case is even worse in so far as the method of illumination with most plates precludes the possibility of obtaining even a moderately clear negative, as the image disappears in the fog before a satisfactory density in the high lights can be obtained.

My experiments were mainly with the hydrochinone developer, according to Baltin's formula, and led to the following results. It is naturally to be understood that the temperature of the solution was always equal.

The original formula consists of:

Hydrochinone	10 grams.
Sulphite of soda	40 grams.
Carbonate of potash	75 grams.
Water	1,000 grams.

This developer with most makes of dry plates acted very finely, and gave soft results. It, however, caused a noticeable fog, even before the necessary density was reached. When the alkali was reduced considerably the development proceeded very slow,

¹ J. F. S., from *Photographisches Wochenblatt*, for AMERICAN JOURNAL OF PHOTO.

resulting in a clearer image, and at the same time giving a harder negative, but in short exposures the fine half-tones were wanting. If, at the same time, the percentage of hydrochinone was reduced, it softened the image, but increased the other deficiencies by lengthening the development and faulty details in the shadows.

The main cause for fog or veiling is the excessively slow penetration of the developer. An increase of the percentage of alkali accelerates this considerably. If we substitute caustic potash for the carbonate we obtain an almost instantaneous action, but the veil of fog is only made worse.

I have lately found that a small addition of pyrogalllic acid added, immediately before use, *gives remarkably satisfactory results*. If a little dry pyro is added to the developer after it is in the graduate, and used at once, it will be observed how small a quantity it takes to accelerate the development; the picture is clearer, without the danger of getting a hard negative.

When the percentage of pyro is increased the development is increased even in a greater ratio, the image often flashes out, the shadows remain glass clear, but the negative often becomes hard, and has a strong, greenish, covering tone.

The percentage of pyro must be varied according to the various makes of plates.

I found that for the Schleussner plates ² the following formulæ answered best:

1. For soft pictures (portraits):

Hydrochinone	1 gr.
Sulphite of soda	6 gr.
Carbonate of potash	7.5 gr.
Water	100 ccm.
Pyro	0.2 gr.

2. For hard and strong subjects (landscapes, microphotographs, etc.):

Hydrochinone	1 gr.
Sulphite of soda	7-8 gr.
Carbonate of potash	7.5 gr.
Water	100 ccm.
Pyro	0.4-0.5 gr.

² One the leading German plate-makers.

The dry pyro can be easily measured with a mustard spoon after the correct quantity is known.

Even with emulsions, which usually work foggy, it is possible to obtain serviceable plates when the correct percentage of pyro is added, and the formula can be depended upon wherever it is difficult or desirable to combine strength of negative with clearness of detail.

As this developer quickly becomes dark it can only be used once. [One batch of plates.—ED.]

AN INTERNATIONAL STANDARD OF PHOTOGRAPHIC WEIGHTS AND MEASURES.¹

BY CAPTAIN ABNEY.

IN the opening address at the late conference President Abney made the following remarks upon the subject of an international standard of weights and measures for photographic purposes. In the course of his remarks the honorable president stated, viz.:

The first point to be considered is as to whether it is desirable that such a standard should exist; and, secondly, what such standards should be. As I am delegated by the Photographic Society to take part on its behalf at the international congress that is to take place at Brussels in August next, I am bound to make my observations somewhat under reserve, since, if not, it might be supposed that I should go to such congress with a mind warped, to a not wise extent, by expressed opinion. Let me say once for all that any opinion I *do* express is only that held for the moment, and may be modified by the arguments which may be put forward by the many eminent colleagues whom one is sure to meet at that Congress. As to the first point, whether it is desirable that uniform standards should be internationally adopted, if it be looked at from a commercial aspect,

¹ Extract from presidential address at Camera Club conference.

there can only be one opinion, that it is most advisable. Those English firms who manufacture plates, for instance, must have found not only that foreign markets are in a measure closed against their manufactures owing to the trouble and expense that is caused by coating plates of sizes quite different to those current in the English market, and it would be a boon to them to be able to send sizes abroad identical with those which they manufacture for home consumption. Now, as to what the standards should be raises questions which have been considered by a committee of the Photographic Society, and they have made suggestions which seem to go some way towards the solution of the problem. I believe I am right in saying, for instance, that they have recommended as a starting-point for plates the half-plate of $6\frac{1}{2} \times 4\frac{1}{2}$, and have made most of the other sizes multiples or submultiples of these. The nearest size in centimetres is 26×18 , and is one which is largely employed abroad, many sizes being multiples of this. If the centimetre were 4, the plates would be exactly equal; but, as it is .394, there is a slight difference between the two, but not sufficient to render English half-plates unusable by foreign photographers. It should be noticed, however, that our present whole-plate becomes a size which is not to be found. It becomes $9 \times 6\frac{1}{2}$ instead of $8\frac{1}{2} \times 6\frac{1}{2}$. The former, to my mind, is a plate of more artistic dimensions, the present whole-plate being somewhat squat. The next multiple is 13×9 inches. I have long ago adopted 12×9 as much better than 12×10 , which is an atrocious proportion. I am inclined to think that 12×9 is better than 13×9 , the length being rather too great when the long side is used for an upright view. Balancing the advantage to be gained by uniformity, however, it seems to me that the proposed sizes are better than our present ones, which seem to have been chosen in a purely hap-hazard manner. By a compromise of this kind the worshipers and users of the centimetre system are rendered happy, and the English have the great advantage of retaining, as at present, the British inch, a standard which, to me, is far preferable to the centimetre, as it is a unit involving too large numbers for small sizes.

So much, then, for a happy compromise between English and foreign measures.

Now, as to the weights and volumes employed, is it possible that any compromises can be arrived at? If we were a new nation without a history and without prejudices, and acting simply out of necessity, I am inclined to think that we might perhaps be induced to adopt the gram and cubic centimetre as the standard of our weights and volume measures, and to use the decimal system. We might possibly also adopt the franc as our standard of money value, for an income of 2,500 francs sounds much larger than one of £100; but we are not a new, and certainly not an unprejudiced, nation, and although the decimal system has been permissive for some years, and though it has been taught in our elementary schools, yet I have not gathered that any one has adopted it in home commerce, that the farmer sells his wheat by the cubic metre, or the tradesman weighs his beef by the kilo, or sweets by the gram. In fact, it appears that no impression has been made on our systems. Under these circumstances, it would appear that the hope that foreign weights and measures would be adopted by the professional photographer is not the most likely thing in the world to be realized, for, although our chemists do *almost exclusively* use the metric system, yet photographers are not chemists as a rule, and I suspect that a book or a formula which talked exclusively of grams and cubic centimetres would not meet with ready acceptance by them. My own opinion is that the gram is a less convenient standard for photographers than the grain. The photographer never requires to be more accurate than to a grain, but he must be more accurate than to a gram. It appears to me that the requirements of internationality would be met by giving all photographic formulæ in parts. Thus a one per cent. solution of pyrogalllic acid dissolved in 100 grains of water, or equally one gram dissolved in 100 cubic centimetres, and a one per cent. solution of pyrogalllic acid in alcohol, would mean one grain of pyrogalllic acid dissolved in the same volume of alcohol that the 100 grains of water would occupy. Luckily such measures are not unknown to us. The gallon of water weighs 70,000 grains, and the old septem and decem burette measure was divided into volumes of which the water between two divisions weighed seven

grains and ten grains respectively. By adopting the grain as the unit of weight and the decem as the unit of volume we arrive at a practical compromise. The photographer would only have to abandon his ounce measure and take to a decem measure; the five-ounce measure would be of about the same size as that holding 200 decems,—*i. e.*, 2,000 grains.

AMATEUR EXPERIENCES.—XI.—A TRUE STORY.

BY J. FOCUS SNAPPSCHOTTE.

IT was on a bright, cheery September day that I journeyed through Delaware county in this state, with camera and outfit safely packed under the buggy seat. My objective point was the old Presbyterian meeting-house at Middletown, for the purpose of making a negative or two of that old historic landmark. The road lay through a rolling country, and skirted now a ripening cornfield, then again an emerald meadow, or a field plowed and ready to receive the seed for winter wheat. The sky was almost cloudless, the air balmy. Dame Nature seemed at her best; in fact, it was an ideal photographic day.

On arriving at the end of my journey, I got out, and hitched the horse against the fence. To set up my tripod and camera and jump over the low coping of the surrounding wall was but the work of a few moments. Picking my way among the mouldering stones and green hillocks until I had found the spot which I thought would give the most picturesque view, the camera was quickly leveled and the focus taken. Intent upon my work, all this had been done without paying any attention to what was going on around me; however, I had not been unobserved. Hardly had I gotten my head out from under the focusing cloth when I heard a voice: "Well, I'll be blamed; why Sergeant Focus, as sure as I'm livin'." Turning around, I saw before me a figure. It proved to be the sexton; there he stood, his spade in his hands in position of "present arms." That the stranger knew was me a

fact; but who was he? where had I ever seen him?—that was the poser. There he stood, a gaunt, spare man, his form bent, hair gray, a thin, straggling beard skirting his hollow cheeks, while his knuckles and joints plainly showed the inroads of inflammatory rheumatism. A pair of jean pantaloons, held up by two leather *galusses*, a cheviot shirt, straw hat, and shoes completed his outfit. In fact, he looked the typical country sexton. There was a look, however, in the clear, gray eye of the old man, as he stood there at present arms, that I had seen before; but where? While I was looking at him, without changing his position he broke out: "Why, Sergeant Focus, don't ye know me?" I still was at fault. Lowering his spade, he said: "Sure, I haint mistaken; ye are Sergeant Focus, as sure as I'm Davis, Corporal Davis; now don't ye know me." There was no mistaking that clear, gray eye, if everything else had changed. The spade was dropped, the camera forgotten for the time, hands were clasped and shook. Sitting down on an old flat tomb, life was lived over again; scenes of thirty years ago were recalled, when we both wore the blue.

In the old sexton beside me I only saw Corporal Davis, a man then in the prime of life, and one of those who had stepped forward for his country's defence at the very first sound of the tocsin of war. He was a Chester county farmer, to the manor born. Muscular and active, always ready for duty, no fatigue was too great, no danger which he feared to face,—a typical American soldier. Such was Corporal Davis thirty years ago; was it any wonder that I failed to recognize him?

After mutual greetings were over he said: "Well, Sergeant, I never expected to meet ye in a fix like this. Why, what's happened you? The idea of you, goin' 'round with a fotegraf box, just like some of them dudes of summer boarders from town. If any one would a'told me they had a'seen ye I wouldn't ha' believed 'em; I'd bet on it. An' ye still as straight as a ramrod, too; an' here's me all killed up with the rheumatiz as I caught down in the old Andersonville bull-pen. Well, I'm glad to ha' met ye, even if I do see ye comin' here like a fotegraf dude. What wuz I a'doin'; diggin' a grave? No; a'fillin' an empty one up. By the way, Sargeant, it was the curiousest thing ye ever heard. Ye recollect young Charlie W——, who used to work for his uncle over yon-

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der, as kept the Howellville tavern? Yes? Well ye know in '62 Charlie listed in the 124th Penna. Vol., Co. I. Colonel Joe Hawley's regiment; ye recollect that regiment, don't ye? It wuz a Chester county regiment. They wuz mustered in August, '62, an' sent right down to the front, an' wuz brigaded with us for a time (1 brig., 1 div., 12 corps), an' before the first month wuz up they got into the scrimmage at Antietam. Ye recollect that bridge and the little Dunker meeting-house, I reckon? Well, after that was over the brigade wuz posted on the Maryland Heights. Well, Charlie took the bad fever, an' died in the field hospital, Oct. 10, 1862." The rest of the sexton's story we will tell in our language. After the death of the soldier he was buried, along with a number of others. Word, however, was at once sent by some comrade to his parents at Sugartown, who at once sent an undertaker down to Maryland Heights to bring the body home. This was done in a hermetically sealed metallic coffin. After its arrival at Sugartown the body was buried in the Middletown Churchyard; but owing to the fact that the soldier had died of a contagious fever the casket was not opened before it was lowered into the ground. Now comes the most curious part. The mother of the soldier was never satisfied in her own mind that the body interred there was that of her son. Nothing could convince her; there was always an unaccountable feeling that something would happen in connection with this fact. Sometimes she would think that he was still alive, and would yet return to their quiet, happy home; then again would come the feeling of doubt and distrust. Thus the years passed, one by one, and in the course of time the brave young volunteer, Charlie W——, was forgotten by all but in the memory of the loving mother. A quarter of a century had passed, and even while preparations were being made by the survivors' association for a reunion on the old battlefield where they had received the baptism of fire, the father of Private W—— died, when the family purchased a burial lot in the New Cumberland Cemetery in Middletown, and when the mother desired that the body said to be that of her boy should be exhumed and laid beside his father. When the metallic coffin was brought to the surface it was found to be intact; at the request of the mother the lid was removed, and the remains were found to be in a remark-

able state of preservation. Still wrapped in his gray army blanket, the only shroud which loving comrades could find to place around him, clad in his suit of blue just as he had died, his features were plainly recognizable, and his hair still maintained an almost life-like appearance. To the mother all doubts were now removed, and unbidden tears coursed down the cheeks of even the old sexton as the veil of a quarter of a century was so unexpectedly lifted. After the grief of the mother had somewhat subsided, and as she leaned forward to take a last look at her long-lost boy before his final interment, a something caught her eye which protruded from the blouse pocket of the dead hero. On a closer investigation it proved to be an envelope and letter, but the dampness of the ground had long since obliterated the superscription, as well as all traces of the writing in the letter. The fond mother, however, took the letter so curiously obtained home with her. It was carefully dried, but not a vestige of the contents could be distinguished. Still, somehow the old lady clung to the discolored paper; her mother's heart seemed to tell her that it was for her. As this matter became noised about the community many were the curious visitors. One of these suggested trying a hot iron on the paper. This seemed so simple that it was decided to try the experiment on the envelope. An iron was quickly heated and placed on the envelope; as it was lifted what was the surprise when the direction was plainly visible:

Mrs. S——— W———,

Sugartown, Chester Co., Pa.

The joy of the old mother now knew no bounds. The experiment was quickly repeated on the precious sheet of paper which was within the envelope, with equal result. The mother read the missive which her son had written while he was dying, twenty-five years before. It was truly a message from the grave.

Such was the true story of the old sexton. After his pathetic story photography had no more attraction for the day. I sadly limbered up my outfit, and then watched the old sexton complete his task in filling up the empty grave. Inviting the old man to jump into the buggy, we drove into Media, and after securing a good dinner we parted, with the mutual understanding soon to meet again.

URANIUM.¹

BY M. H. FOURTIER.

ALL bodies likely to undergo any change whatever under the influence of light are, or ought to be, under the domain of photography. Numerous are the substances in this category,—more numerous even than is generally believed, for if some, like the majority of argentic combinations, clearly display decomposition by their change of color, others suffer a change of structure which does not appear except when it has been subjected to a later reaction. This is the case particularly with the salts of uranium, which are the subject of this monograph.

In 1796 Klaproth, the celebrated German chemical mineralogist, separated from a certain ore, the pitchblende, a grayish powder of metallic appearance, which he took for a metal, and named uranium. It was at this time that William Herschel discovered, to the great surprise of the scientific world, a new planet in the heavens, which he named Urania.

The new metal took in chemical nomenclature the name which was conspicuous at that day, and although not for the same reason, was baptized by Klaproth with the name of uranium.²

A half-century later, in 1842, Peligot showed that uranium, so-called, was nothing other than the oxide of a metal which he himself had separated, and which he named uranium. The civil status of the new, simple metal was quite rapidly established. Its symbol is U., its density is 18.4, its equivalent 120. It is a metal of little malleability, hard, of a color like nickel, but tarnishing quickly in the air by taking a yellowish tint. It is not abundant, of difficult extraction, and up to the present time without useful application.³

The principal ores are the pitchblende, composed in the larger part of a saline combination of uranium on itself; the urinate of

¹ Translated from *Le Photo-Journal* for the AMERICAN JOURNAL OF PHOTOGRAPHY.

² The name Uranus was given to it, from the Greek vocable, Ouranos, the name of the divinity who presided over the destinies of the heavens.

³ Much used in enamel painting and in the staining of glass.—ED. A. J. P.

uranium, mixed with complex silicates of iron, lead, chalk, and magnesia. This body accompanies the ores of lead and silver in the mines of Saxony and Bohemia, at Joachimsthal, and at Schneeberg. In France one finds the autunite or uranite, which is a urano-calcic phosphate, separated in small, foliated masses, of a greenish-yellow color, in the deposits of pegmatite at St. Symphorien, near Autun (whence its name), and in the granite of St. Yrieix, near Limoges.

We will not delay to study those salts of uranium which are not employed in photography, but will seek to establish in consequence of what certain properties among them may be utilized. The salts of uranium belong to two different classes: the uranous salts at base of the proto-oxide, and the uranic salts. The first are characterized by a green, and the second by a yellow, coloring, with a greenish efflorescence. The principal reaction which differentiates these two salts, and which we may use to our profit, is the following: The red ferro-cyanide of potassium has no action on the uranic salts, while it will precipitate the uranous salts in brick-red; now the uranic salts are changed to uranous salts by the light, hence an entirely natural application to photography. It is, however, to be noted that the *yellow* ferro-cyanide precipitates both in a brown salt, hence the necessity for the use of the red cyanide, perfectly pure.

We will see later that the uranic salts, in the presence of organic matter, become a powerful developer, and under this title they will be employed in certain toning baths to accelerate the precipitation of gold.

The salt most used in photography is the azotate of uranium. The uranous azotate cannot be separated, on account of its extreme instability, but it is produced by the action of the light on the uranic azotate. The latter, also called azotate of uranyl, has for formula $AzO^3(UO)^2 + 3H^2O$. It is very soluble in water (200 per cent. at 18°), and is very permanent in this state; but, on the contrary, in alcoholic or etherized solutions it is very easily changed by the light, as Gehlen has shown. This will explain the presence of one or the other of these bodies in further formulæ. Mixed with some organic matter, such as the starch of starch, the gela-

tine, albumen, it is changed in the light into the oxide and uranous azotate, and acquires then a great power of reduction. The azotate of uranyl is generally acid, and when in use in photography it is absolutely necessary to neutralize it, otherwise the free acid will saturate the uranous oxide in proportion to its formation, and the photographic action will be found to be lessened, if not entirely annihilated. We have felt obliged to demonstrate these points, in spite of their dryness, because they give the key to the different formulæ which we shall use.

From the beginning of photography some have sought to put to profit the properties of the salts of uranium. It was so that Niepce de Saint Victor impregnated a paper with a 20 per cent. solution of azotate of uranyl; then, after drying, exposed it under a negative.

The image, very faintly indicated by a feeble green coloring on a yellow ground, was relieved of the excess of nitrate, not decomposed, by a warm-water bath, then toned into brick-red by precipitation in a two per cent. bath of ferro-cyanide. This in harmoniousness was toned to green by the sulphate of iron, to violet by the chloride of gold, or to black, or rather a dark green, by the perchloride of iron. These proofs of not agreeable tones, requiring also much dexterity, are given up, and we have cited them from memory only. Nor will we urge the work of Bollmann Blanchire and of Burnett, who tried to improve the process.

By using the double azotate of uranyl and of copper, one obtains the best results. The bath is composed of

Azotate of uranyl	127 gr.
Azotate of copper	38 gr.
Distilled water	1000 c.c.

Dissolve the two azotates in a small quantity of water, and neutralize with ammonia, then add the remainder of the water; the paper is put to float on this bath for one or two minutes, then it is dried and protected in darkness; on exposing from eight to twelve minutes, under a negative, a very feeble image is formed on the surface of the paper. Developed in a two or three per cent. bath of yellow ferro-cyanide the image takes a very agreeable sepia-brown tone.

We will describe the following process of Diamond's: Size strongly some strong paper with gelatine or arrow-root, then sensitize it for one or two minutes on the following bath:

Azotate of uranyl	72 gr.
Azotate of copper	20 gr.
Distilled water	1000 c.c.

The bath is neutralized by some carbonate of soda. The image is quite visible, and is developed in a bath of red prussiate, at eight per cent., well washed, and then dried. The proof takes a color giving rather the effect of blood.

Another process to describe is that which was proposed by Worthly in 1865, and which was named the uranic collodion process. Six grams of uranic azotate are dissolved in 100 c.c. of a mixture of ether and alcohol (75 c.c. of the first and 25 of the second). Neutralize the solution with the soda, and let it stand; the liquid is decanted, and for 100 c.c. add a gram of dissolved azotate of silver and a gram of gun-cotton; let the collodion stand during twenty-four hours, then spread on paper strongly sized with arrow-root. The dry paper is exposed under a negative, and soon forms an image of a green-brown, which should be washed at first in an acidulated bath of three per cent. of sulphuric acid, in which it should remain until the whites are bleached; then, after washing in a bath of sulpho-cyanate of gold, obtained by mixing

Sulpho-cyanide of ammonia	72 gr.
Chloride of gold	0.30 gr.
Water	1000 c.c.

finish by a slightly prolonged washing. The image is of a violet tone, of rather an artistic effect. The length of exposure is a little more than that required by the ordinary albumen paper.

ON GOLD-COLORED ALLOTROPIC SILVER.

BY M. CAREY LEA.

*(Continued from page 221.)**Action of Different Forms of Energy on Allotropic Silver.*

1. *Action of Electricity.*—High tension electricity instantly converts gold-colored silver to the ordinary form. When paper covered with a film of gold-colored silver is held between the conductors of a Topley-Holtz machine, each spark forms a gray dot of ordinary silver. A powerful discharge is not necessary; an inch spark from a small machine is effectual, even when the condensers are cut off. There is also a lateral action which is best seen when several slips of such papers are held loosely together and placed between the conductors. When the slips are opened a little the lateral branches are beautifully seen, playing through the silver. Their fine emerald-green color contrasts with the purplish shade of the spark. When several pieces are in this way held between the conductors together there is a transfer of silver from one piece to the other, so that the back of each piece of paper is blackened by silver carried over from the one behind it.

That the branching gray spots in this way formed are normal silver is easily proved by immersing the piece in a dilute solution of potassium ferricyanide. The part acted upon by electricity is not affected by the reagent, while the rest of the film shows the coloration characteristic of allotropic silver. In Plate I. the upper figure shows a slip of paper at one end of which electricity has been transmitted, and the figure below a similar slip that has been subjected to the action of the ferricyanide, showing that where electricity has passed the silver has become normal, and is not affected by the reagent.

2. *Action of Heat.*—Allotropic silver is converted by heat to normal silver in either the wet or dry state.

Dry Heat.—When films of allotropic silver on glass are placed in a water desiccator, and are kept at 100° C. for eight or nine hours, the central positions are converted into the intermediate

form, while at the edges there is a border of grayish-white ordinary silver. In fact, the change to white silver at the edge commences before the central part is fully converted to the intermediate form.

At higher temperatures the change is much more rapid and better marked. At 180° C. the first effect is to darken a little (this is usually the first effect of heat); this continues about five minutes. Continuing the heat for ten minutes more, the slight darkening disappears, and the film has a bright, pure gold color, sometimes with a slight salmon tinge. The change to the intermediate form is now complete; the film burnishes yellow, and does not react with potassium ferricyanide. It is of interest to remark that the color-reaction persists as long as there is a trace of unconverted material, *so that a film may burnish yellow and yet show a well-marked color-reaction*. This is because most, but not all, of the material has undergone conversion. At 200° C. the film begins in about ten minutes to show a white border, and in half an hour or thereabouts it whitens completely. In these experiments the best support for the film is chemically clean glass, except that for testing the burnishing a film on paper is needed. The paper should be very pure.

Allotropic silver in the solid form heated to 180° or 190° for about fifteen minutes undergoes a similar change; whereas before it was easily pulverized, it is now almost impossible to reduce it to powder, and the powder is yellow instead of being grayish black.

Moist Heat.—A film spread on pure paper, and placed in distilled water maintained at 99° or 100° without actually boiling, at the end of half an hour is converted almost wholly to the intermediate form. It burnishes pure yellow, but still shows traces of the color-reaction.

A better plan of operating is to immerse a film spread on glass in distilled water, and to place it in a desiccator with a water jacket. After keeping for twenty-four hours close to 100° C., the film has become pure white. It is not disintegrated by the change, but may be detached from the films exactly resembling ordinary silver leaf.

The effects of heat are shown in Plate I., lower pair of figures.

3. *Action of Mechanical Force (Shearing Stress).*—The slightest application of force suffices to instantly convert gold-colored allotropic silver to normal silver. A glass rod with a rounded end drawn lightly over the surface of a film on paper leaves a white trace behind it. The force sufficient to cause this change is so slight that one might doubt its reality were it not for the decisive proof immediately at hand. First, there is a characteristic change of color; the film is as yellow and brilliant as gold leaf, the line drawn by the glass rod is of pure white silver. Immersing the film in a solution of potassium ferricyanide the white lines simply change to gold color, whilst the film surface on which they are drawn passes through a brilliant succession of colors. (These effects are represented in Plate II., the uppermost figures.) For this use, freshly made material should be employed, and the film itself should have been freshly spread on pure paper or card, and used within a few hours after drying. This because of its easy partial passage, especially in thin films, to the intermediate state, in which it gives a yellow streak. (See also remarks as to partial conversion, *ante*.)

When the experiment is performed under proper conditions the effect is very striking, by reason of the instant conversion of the pure deep yellow metal to perfect whiteness without a trace of color.

In an earlier communication to journal this it was mentioned that, having taken with me on a journey several small vials containing gold-colored silver, they were found at the end of the journey to be all converted into white silver without having undergone any disaggregation, and retaining the original shape of the fragments. The white silver formed had the fine frosted white color of pure silver. This change was attributed to the friction of the fragments against each other, occasioned by the motion of the journey, a conclusion that was confirmed by finding that, when cotton wool was forced into the empty part of the vial in such a way as to prevent all internal movement, the substance could be sent over a fourfold distance without alteration.

It was also observed (and this is a matter of special interest) that when a partial change had been effected by friction this alteration went on, although the substance was left perfectly at

rest, until it became complete. With time, all solid specimens of allotropic silver undergo this spontaneous change to bright white silver, apparently normal silver, even when thoroughly protected from light.

Out of over twenty specimens in tightly corked tubes, packed in a box and left in a dark closet for a year, not one escaped conversion. Spread on paper or on glass and duly protected, this change is slower.

4. *Action of Strong Acids.*—The action of acids upon allotropic silver has been already described, it remains only to add here that the conversion to normal silver is entirely unaccompanied by the escape of gaseous matter; not a bubble can be detected by the closest observation.

By acting on dry films with dilute sulphuric acid it is easy to make the conversion gradual, and so to trace its passage through the intermediate form.

With sulphuric acid diluted with four times its bulk of water and allowed to cool, an immersion of one or two seconds converts a film on glass or on pure paper wholly to the intermediate form. It is then bright gold-yellow, but shows no color with the ferricyanide reagent. With sulphuric acid diluted with twice its bulk of water, and used while still hot, the action is instantaneous, and the allotropic silver is converted into light gray normal silver. The silver obtained in this way is very different, and gives no reaction with potassium ferricyanide, whereas even ordinary silver-leaf gives a pale-colored reaction. (See Plate II., lower pair of figures.) The same acid, after cooling, acts more slowly; the product is more yellowish, owing to the presence of a certain quantity of the intermediate form.

5. *Action of Light.*—When allotropic silver is spread as a thin film on glass or on pure paper it may be preserved for a length of time apparently unchanged. This appearance is deceptive. From the moment that the film is formed a slow but steady change commences, which can be best explained by supposing that a gradual polymerization takes place. Even after eight or ten hours' exposure to ordinary diffuse light a distinct loss of activity can be detected by careful testing with potassium ferricyanide. The

change which occurs is in the nature of a tendency to a very gradual passage into what I have called the intermediate form, in which the gold-yellow color remains unchanged, while the chemical activity is lost or much diminished. Although a commencement of this change can be detected in a few hours, it goes on slowly. By exposure to one or two days of summer sunshine (a much longer time is required in winter) the change is nearly complete. The exposed portions are lighter and brighter, and in solution of ferricyanide they color very slowly. The question naturally arose whether light by a sufficiently long-continued exposure could complete the change and convert allotropic to ordinary white silver. To obtain a decisive answer the following experiment was made:

At a window having a southeastern exposure and unobstructed light there were placed films on glass and on pure paper. Some of these were placed in a printing frame under an opaque design. The other stood side by side with the first, but uncovered. The exposure was continued for four months, from the end of January to the end of May. At the expiration of this time the uncovered paper and glass films were still bright yellow. But of those in the printing frame the exposed portions had become nearly white, while the protected parts retained their full deep gold color. It may at first seem strange that the uncovered pieces were less affected than those exposed in the frame. But this difference was always observed, namely, that if two films were exposed side by side, the one in a printing frame under glass, the other simply fastened to a board, the last mentioned was always the less affected. The explanation of this seemingly anomaly lies in the fact that allotropic silver is always much more easily affected by heat than by light. The glass in the printing frame by exposure to sunlight becomes hot to the touch, and thus the film under it is kept at a temperature many degrees higher than that of the other film that is freely exposed to the air. The higher temperature aids the effect of the light.

Since this was written I find that both Herschel and Hunt noticed an analogous fact in the case of silver chloride,—viz., that paper prepared with it darkens more rapidly under glass than

when freely exposed, without, however, suggesting the cause, which is the same in both cases. I have observed that silver chloride darkens more rapidly when exposed under warm water than under cold to the same light in vessels side by side.

It appears, therefore, that the agency of light is somewhat similar to that of the other forms of energy, but very much slower. Experiments made for the purpose demonstrated that it is the more refrangible rays that effect the change.

With light, the production of the intermediate form is never very satisfactory. Long exposures are needed, and before the change to the intermediate form is complete the further alteration to white seems to commence. With heat the changes are much better marked. When a film on pure paper has received an exposure of one or two days of summer sunshine under an opaque design, the exposed portions are sufficiently changed to have lost much of their chemical activity, so that when the film is plunged into a bath of potassium ferricyanide the effect given in the lower figure of Plate III. is obtained. The color represented is one of an immense variety of tints produced by this reagent on the unaltered or active form. The upper figure of the same plate gives the effect of a very protracted exposure (as above described) on pure paper (or glass) under glass. With some kinds of sized paper this effect is produced by a much shorter exposure, apparently owing to the presence of traces of a hyposulphite, which appears to aid the action of light.

These seem to be not merely new facts, but to belong to a new class of facts. No instance has been hitherto known of an element existing in so great a variety of forms and passing so readily under the influence of any form of energy from one to another of them.

It is evident that a connection must almost certainly exist between these varied transformations and the changes which many silver salts undergo through the action of light and other forces. This connection will form the subject of the second part of this paper. The present part will be concluded by a somewhat fuller description of the color-reaction, which is especially characteristic of allotropic silver.

The Color-Reaction.—When allotropic silver is immersed in a solution of a substance readily parting with oxygen or sulphur or with a halogen, a film is formed which exhibits the colors of thin plates. Such phenomena are familiar, and are seen in the blueing and yellowing of steel in tempering and the coloring of other metals when covered with films of oxide or sulphide. With allotropic silver the colors are very brilliant, probably because silver is the best of all reflectors for rays having a nearly perpendicular incidence, sending back about ninety per cent. of such. Light, gold-colored silver gives the most brilliant effect.

The substances which produce these reactions are potassium ferricyanide and permanganate, ferric and mercuric chlorides, alkaline hypochlorites, and sulphides, mixtures of potassium bichromate with hydrochloric or hydrobromic acid, solution of iodine, etc. Potassium ferricyanide in a five or ten per cent. solution is the best of these reagents, because its action is more distinctive.

In particular the blues which it gives are of great purity, and the purples are very rich. Ferric chloride gives beautiful tints, especially a peculiar, glittering rose color. It must be very much diluted, until the solution loses its yellow color and takes a straw shade. It often happens that the characteristic color does not appear whilst the film is in the solution, but a bronze shade only, the permanent color appearing only after the film has been dipped into water and blotted off. Potassium permanganate also gives rise to a beautiful succession of colors on allotropic silver, but is somewhat uncertain in its action.

A ferricyanide is, therefore, the best reagent. As to the substance constituting the film which is formed, it is difficult to say whether it is silver suboxide or ferrocyanide. When potassium ferricyanide is allowed to act on moist allotropic silver suspended in it, and the action of the ferricyanide is carried to its limit, the silver is entirely converted into a yellowish-white powder, consisting almost wholly of silver ferrocyanide mixed with a little silver ferricyanide.

Of the many varieties of ordinary silver which exist, allotropic silver is convertible into two only. The high tension spark, heat, and acids convert it to dull gray silver. On this variety potassium ferricyanide has no action whatever, as will be seen by an

inspection of the plates. Light under glass and pressure each convert allotropic to bright white silver, and on this form potassium ferricyanide acts slightly, converting the silver color to gold. It is needless to say that this gold color has nothing to do with allotropic silver; it seems to be produced in the following way: When potassium ferricyanide acts on films of allotropic silver, its first effect is to deepen the gold color to a gold brown, passing rapidly on to the other shades. The action on the bright white silver is very slight and apparently just reaches this gold stage, which corresponds to an air-film having a thickness of from 0.000150 mm. to 0.000160 mm.

The succession of colors obtained on allotropic silver with potassium ferricyanide is as follows:

First order.—Russet brown, brown red.

Second order.—Rich and deep purple, dark blue, bright blue, pale blue green russet, red.

Third order.—Reddish purple, bluish purple, rich green.

The fourth order is not reached, for after this the colors become much mixed. Probably the action is no longer sufficiently uniform. The other differences, besides the absence of the fourth order, as will have been observed, are that in place of the yellow of the second order, corresponding to a thickness of air of 0.000432 mm., there is a green, though of a more russet shade than that of the third order. In the third order there is at no time a pure blue corresponding to 0.000602 mm., but only a succession of beautiful red and blue purples, gradually passing into green.

There are few more beautiful experiments than to watch these changes. Purity of color, however, depends much on the purity of the paper employed. Want of this purity will often cut short the changes at the pale blue of the second order.

I have endeavored to give some idea of those colors in the plates which accompany this paper, but it has proved to be a most difficult task. The colors represented are: Plate I., purple and blue of the second order; Plate II., purple of the second order and green of the third order; Plate III., brown red of the first order. It has not, however, been found possible to correctly reproduce the brilliancy and depth of color of the originals.

GLIMPSES FOR THE CAMERA.

BY A. KITE.

"**B**EAUTY is its own excuse for being," and so it has always been." Each year thousands of persons hie themselves to foreign lands in search of the picturesque and beautiful. Others again, wiser in their generation, remain in this their own land, with its exhaustless scenes of beauty, which are "ever change-ful, ever new."

Our magazines, which formerly abounded in articles on foreign travel, are now filled with descriptions of our own wonderful land. Our book-shelves show "A Week in the Yosemite," "The Cataracts of America," and similar volumes, side by side with those showing the beauty of the Rhine. It is not alone the journalist and author, beside the artist, who glories in a visit to the choice spots which nature has prepared for the lover of nature in its pristine beauty. There is another class, of more modern creation, whose enthusiasm is likewise unbounded for the beauties of nature.

The peaceful, quiet mountain lake, surrounded by the mighty giants of the forest, or the unceasing ebb and flow of the ocean's boundless tide, all affords him equal pleasure. It is needless to say that we allude to the amateur photographer. He has become a well-known feature everywhere by the box he carries in one hand, while just as surely under the other arm may be noticed the characteristic trio of sticks.

But so well has the ground been gone over that the question often arises with this new terror of society, where to find new bits for his lens and camera. In this situation the writer found herself early this spring, when chance brought her to the picturesque village of Ellenville, which nestles at the foot of the Shawangunk Mountains, in Ulster county, New York. This is surrounded by mountains, some of which rise to a height of two thousand feet or more, where from the loftiest heights one can view the surrounding country for fifty miles or more, as it is

spread like a panorama before him. Fields of beauty here await the amateur photographer. The pristine sanctums of nature, as yet uninvaded, have lost none of their romance.

One can linger for a season in this land of rest, climb the highest crests of the mountains and descend to the nethermost caves, or, anon, bathe in the glow of glorious sunsets. From the Crystal Mountain Springs one seems even to imbibe oblivion of all the discordant cares of city life.

The same may be said of thousands of similar nooks in our boundless country. There is little or no necessity to cross the stormy billows in pursuit of beauty. First seek out our own choice bits from quiet forest vale to the breaking billow on the rock-bound shore, and then, if your desire is not satisfied, it will be time enough to look to foreign shores.

A NEW COLLOTYPE PROCESS.

BY L. WARNERKE.

A SIMPLE process for producing collotypes without the aid of costly apparatus was demonstrated by Mr. L. Warnerke before the London and Provincial Photographic Association. The demonstrator expressed his opinion that a wide future is open for photo-mechanical printing. There was a general belief that special appliances were necessary, and that generally all processes of this kind were troublesome to work. The demand for cheapness and quickness of production had proved detrimental to good work. The process he intended to demonstrate was simple, requiring no special apparatus of any kind, enabling amateurs to produce quickly an unlimited number of copies on ordinary paper with printer's ink, from photographic negatives. For the purposes of demonstration the lecturer had brought with him several sheets of exposed films in various stages. He proceeded to describe the process: A sheet of vegetable parchment, having a film of gelatine on its surface, is immersed for three minutes in a bath of bichromate of potash,

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neutralized with ammonia. The sheet is then squeezed to a glass plate that has previously been cleaned and polished with French chalk. The plate is now left to dry spontaneously. The drying should be completed in about ten hours, when the film will peel off its support. The maximum of sensitiveness would be reached in from two to three days after sensitizing. The object of drying the sheets on glass is to produce a flat surface, thus giving perfectly even contact with the negative. The sensitized film is exposed in an ordinary printing-frame. When sufficiently exposed, the image will be quite visible. An exposure of the back of the film for two or three minutes to diffused light will cement it to the parchment support. The exposed tissue is now placed in water, and allowed to remain about two hours until quite colorless; it is then drained and blotted, and the following solution poured over it:

Glycerine	70 parts.
Ammonia	3 parts.
Water	30 parts.*

After soaking for an hour, the tissue is stretched upon a frame over a block of wood, and rolled up with printer's ink. For this purpose the lecturer recommended using first a stiff ink, and afterwards a thinner kind. Authorities differed with regard to the materials for thinning the ink. The lecturer said he preferred lard for this purpose. Sufficient rolling having been given to the surface of swelled gelatine, a sheet of paper is placed on it, and an impression can be taken in an ordinary letter-copying press. Mr. L. Warnerke, at the conclusion of the demonstration, pulled several proofs from a sheet of prepared tissue, and passed them round. In answer to several questions Mr. Warnerke said he was unable to state the limit of the number of impressions that could be taken from one sheet; he had taken as many as three hundred himself. Any paper might be used. It was necessary, in printing, to lay strips of paper round the inked image to protect the sides of the sheet of paper receiving the impression.—*The Photographic* (London) *News*.

Photographic Hints and Formulae.

How to Make Diapositives from Engravings and Prints in the Original Size.—The following simple and trustworthy method is described by E. Ammann in the *Archiv*. A well-polished glass plate is coated with one of the well-known sensitive gum and bichromate solutions, as used in the powder process, and dried. The copper engraving or wood-cut from which the transparency is to be taken, is placed with its back outwards in the printing-frame, the prepared glass plate being laid on it. It is then exposed, dusted-in with suitable colors, washed out, dried, and varnished. The transparency is then finished. In order to prevent the paper of the engraving from adhering to the bichromate film of the plate during printing, the back of the engraving or print is previously rubbed in with turpentine, and then laid aside for a few minutes. The paper is thus not only provided with fatty matter which prevents adherence to the glass, but it is at the same time rendered transparent, so that in dusting on the colors the grain of the paper remains invisible. If pure and clear turpentine is used, no trace of it will remain on the paper after evaporation.

Turpentine as an Accelerator in Development.—M. Wolf and P. Lenhard have discovered that turpentine oil, if added to the hydroquinone developer, acts as a powerful accelerator. They state that if a few drops of this oil be added to the developer, the reduction takes place much more quickly than without this addition, and that, at the same time, the shadows of the negative turn out much denser. Turpentine seems to act here similarly to hyposulphite of soda in the ferrous oxalate developer. Care should, however, be taken not to use too much of the oil, as this causes patches. The following formula was used by the authors :

Water	100 c.c.
Soda	8 grams.
Caustic soda	0.5 gram.
Sodium sulphite	5 grams.
Hydroquinone	1.2 gram.

To one-half of this quantity three drops of turpentine were added. I do not know, however, whether the *quantities* given here are quite correct, since the authors (Eder's Year-Book, 1891), in the formula for the hydroquinone developer, are talking of "parts," and in the case of the turpentine which was added, of "drops."—*Photo. News*.

Printing on Wood.—A professional photographer who does a great deal in making prints from negatives on sensitized wood blocks for the use of wood-cutters, was kind enough to demonstrate to me the other day his mode of working. It will, perhaps, be of interest to some of your readers :

Gelatine	8 grams.
White soap	8 grams.
Water	500 grams.

The gelatine is allowed to swell, dissolved by means of a hot water bath, and the soap added gradually with constant stirring. Finally, the solution is filtered through muslin. With this mixture, to which some zinc white is added, the wood block is well rubbed in, and allowed to dry ; the film should be as thin and even as possible. The wood block is then, by means of a broad brush, coated with the following solution :

Albumen	30 grams.
Ammonium chloride	1.2 gram.
Citric acid	0.2 gram.
Water	24 c.c.

The albumen is beaten up to a froth, and allowed to settle ; then the water, the ammonium chloride, and the citric acid are added in the order indicated. After the coating has dried, the film is sensitized by means of

Silver nitrate	3.2 grams.
Water	32 c.c.

Of which solution a little quantity is poured on and distributed with a glass rod. The surplus is poured off, and the block allowed to dry. Printing is done as usually, but it is not necessary to over-print. After printing, the surface of the block is immersed for about three minutes in a weak solution of common salt in water, in which the print will be bleached to some extent. It is then rinsed under the tap, and fixed

for from four to five minutes by means of a concentrated solution of hypo. Finally, it is washed for about ten minutes under the tap, and then dried.

The *Revue Suisse de la Photographie* vouches for the merits of the following pyro-intensifier for the ordinary dry plate :

A.—Water	1½ ounces.
Citric acid	3 grains.
Pyro	15 grains.
Glycerine	1½ ounces.
B.—Water	1½ ounces.
Nitric acid	45 grains.
Nitrate of silver	1½ drachms.

for use

A	1 part.
Water	2 parts.

Flow the very carefully washed plate with this solution until it is thoroughly saturated, then pour off and add A to seven drops B. After the intensification has proceeded far enough, wash and fix as usual.

The following hints are given in the *British Journal of Photography*, and will prove of value where it is desired to dry plates or paper, and the regular appliances are not at hand, viz. : Photographers frequently require, in experimental work, to dry plates rapidly without the aid of heat or the use of alcohol when a properly constructed drying-box is not at hand. In such a case the following may be of service. A short time since we were assisting in some experiments in orthochromatizing plates, when the above difficulty arose. There was no regular drying-box at command in which the plates could be placed, and there were no means of opening the dark-room door without admitting light, neither was there chloride of calcium in the house. At our suggestion, a couple of rough deal boxes—French butter boxes—were obtained from the nearest cheesemonger and placed in front of the kitchen fire, together with several sheets of blotting paper, until they had become “bone dry”—thoroughly desiccated. One of these was taken into the dark room, and the plates, after preparation, placed therein with several sheets of the paper crumbled up. In an hour or so the other box, with more paper, was made to take the place of the

first one, which was again placed in front of the fire, the boxes being changed every hour or so. In a few hours the plates were completely dried. The principle of this method of drying is that the wood of the box and the paper are so completely desiccated that they become greedy of moisture, which they rapidly absorb from the plates.

The Deutsche Photographen Zeitung has been subjecting Mr. Muybridge's exhibits in Berlin to some rather severe criticisms. It states that his "series photographs" are in no wise advanced beyond the standard of fifteen years ago, and that the projection and manipulation are extremely mediocre. A photograph of Queen Victoria in Trafalgar Square it characterizes as a "cloud-picture, in the fullest sense of the words." It would be interesting to know when Her Majesty was last visible in Trafalgar Square.

According to Dr. Janeway, in his *Photographic Lexicon*, the color of the ordinary cyanotype or blue print may be varied as follows.

The well-washed print is placed for a few seconds in the following solutions :

A.—Dark blue-black.

Saturated solution of sulphide of iron . . . 4 ounces.
Sulphuric acid 4 drachms.
Water 4 ounces.

Or

Acetate of lead 2 ounces.
Water 8 ounces.

B.—Green, print rather dark, then immerse in

Water 8 ounces.
Sulphuric acid 1-2 drachms.

C.—Deep black, immerse for five minutes in

Tannin 1 drachm.
Water 4 ounces.

Then one minute in

Soda 1 drachm.
Water 5 ounces.

Then repeat the operation until the desired tone is obtained.

D.—Sky-blue, dip the well-washed print in a solution of citric or acetic acid.—*Photographische Wochenblatt*.

The Permanency of Water Colors.—Prof. V. Wonweremans, of Vienna, has made some investigations as to the permanency of water colors. He painted a number of surfaces of equal area with various water colors, and divided them into two equal parts; one portion was exposed for two weeks to the sunlight, whilst the other was kept in the dark. Gamboge and Indian yellow suffered only slight change; yellow ochre, burnt sienna, sepia, and the blues underwent no change; vermilion, however, lost almost entirely its fire; some vermilion tones became a dirty brownish-violet, and carmine lake, as well as pure carmine, changed to a scarcely perceptible rose. Neutral tint, a mixture of carmine, and pin's blue took a much bluer tone. As neutral tint mixed with burnt sienna gives a handsome grey, which is much used by retouchers, it is preferable to use, instead of neutral tint, the much more certain indigo-blue.—*Photo. Archiv.*

Our British contemporary reminds its readers that the present is an unusually excellent time for obtaining a stock of cloud negatives for future use. During the latter part of March and the early weeks of April better cloud effects are to be seen than, perhaps, at any other period of the year; also the light is generally excellent for securing them. It is tolerably well known to practical men that the light just after an April shower has passed is about the most chemically active of any during the year. Some professionals go so far as to affirm that in the studio an April light is preferable to any other. Therefore it is the best time for taking specimens.

Stripping Films from Dry Plates for Photo-Mechanical Processes.—The well-known firm of Thevoz & Co., in Geneva, recommend the following process as being applicable to all makes of dry plates:

If the negative has not been through an alum bath it is necessary to immerse in a saturated solution of alum. After being thoroughly dried it is heavily coated with a two per cent. solution of collodion; it is then washed under a tap, and immediately placed in a solution of

Water	32 oz.
Hydrofluoric acid	1 oz.

This must be done in a gutta-percha tray, and on account of the extremely dangerous nature of the solution, the greatest care is necessary during the manipulations, as the least particle touching the

skin causes deep ulcers. The negative is left in this solution until the edges commence to frill; it is then taken out and covered with a piece of paper a trifle smaller than the negative. The extending edge of the film is then carefully turned over the paper with the point of a pen-knife; it is then an easy matter to remove the film with the paper.

The stripped film is then laid upon a sheet of glass, previously covered with collodion; the paper is then stripped off, and the result is a reversed negative when removed from the glass, which can be used for any of the various photo-mechanical processes where a reversed negative is requisite.

Dr. Liesegang adds that although this method is not new, it certainly deserves to be revived on account of its utility.—*Photo. Archiv.*

Mr. Fourtier (in Bulletin du Photo. Club de Paris, in his article on the "Elimination of Hyposulphites of Soda,") gives the following test, which may be new to our readers:

AZOTATE OF SILVER PROCESS.—The azotate of silver is a very sensitive reagent for indicating the least traces of hypo. Let the proof drip into a testing tube, and boil the water so received. One then adds a few drops of a one or two per cent. solution of azotate of silver. A black precipitate reveals a ten-thousandth of hypo; for a smaller quantity than that it gives a yellow precipitate. This effect, however, is well known under another form: if one touches a proof with fingers impregnated with hypo, one will make a black or yellow spot. This is because the silver is not dissolved in the hypo except when the latter is very much in excess, therefore it precipitates itself in the form of a sulphuret.

The Schuylkill Camera Club, of Pottsville, lately gave their second annual exhibition. About two hundred slides were shown. The most interesting were a series of local views by George M. Bretz, a member of the club. These views consisted of a number of mine views taken by Blitz-Pulver; also some portraits of the executed Molly Maguires and the haunts which they frequented.

The hen of the United States was worth to this country on her own personal account last year \$200,000,000, according to the bureau of industrial statistics.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting was held on Wednesday evening, May 13th, 1891, the president, Mr. John G. Bullock, in the chair.

The Board of Directors presented their monthly report, in which the standing committees for the ensuing year were announced. They also reported the purchase of a fine pair of dissolving optical lanterns, including five pairs of lenses of various focal lengths, suitable for rooms or halls of any size. Important additions to the library were announced, also the election of the following active members: Robert Eastburn Fox, William Stewart Harding, and Thomas Jonathan Keltner.

The president announced the appointment of the following gentlemen as a special committee to take into consideration the feasibility of starting a movement looking to a uniform method of marking the sensitiveness of dry plates: Messrs. Charles R. Pancoast, Coleman Sellers, Frederick Gutekunst, and Thomas H. McCollin.

Mr. John Carbutt exhibited a Watkins exposure meter which he had brought for examination, as promised at the last meeting. He had tested the meter that morning, and it seemed to agree with the one he had previously used, which had been brought over by a gentleman living in the west, who desired him to rate his plates to work with it, if possible. The maker of the instrument had attempted to give some scale by which American plates could be used, but as far as it related to his (Mr. Carbutt's) plates, it was very far from being correct. Various negatives were shown to the members by Mr. Carbutt, illustrating his trial of the instrument, the conditions under which they were exposed being fully described. His opinion was that the meter was practically correct, provided the sensitiveness of the plates used was known, and this would have to be ascertained by the operator, as there was no correct guide given. A man would have to use judgment in its use.

The chairman inquired if one would not have to use as much judgment in its use as was required in exposure by the ordinary method?

Mr. Carbutt said that the instrument did what was claimed for it. It saved the wasting of plates. In regard to the pendulum attachment, for his part he would prefer not to use it, because with our strong sunlight it would puzzle a great many to watch both the pendulum and the sensitive paper at the same time. The instrument had this value, that it would enable them to estimate the quality of the light better

than the eye could, especially at this season, when the light is so changeable.

Mr. Hand said he had examined one of these instruments, and found that the indexing was wretchedly done. It was not in anywise accurate.

Mr. Carbutt said that in using this instrument, and in correspondence with the agent, he found they did not agree. Where the instrument he was using said such and such was the reading, he (the agent) said it could not be; hence their instruments were evidently different.

Mr. Cheyney said there was an article in the current number of *Anthony's Bulletin* on the subject of exposure meters, which seemed to him more rational than any of them. The inventor of the meter referred to coats the bottom of a brass tube with luminous paint, which he exposes to the light the picture is to be taken with. Then a cap is placed on the tube, and through a small peep-hole the time it takes the luminous paint to fade is noted. This luminous paint is affected entirely by the blue rays, and a very close approximation can be made as to the proper exposure to be made.

The chairman said he did not think it could be depended on. The same batch of paint might be constant, but no two batches would be alike.

Mr. Ives remarked that the time in which this paint lost its luminosity depended upon the temperature. If it was warm it lost it quicker; if cold, it held it for a long time.

Mr. Stirling thought in that case one would require a series of comparative tables. When the thermometer was 32° , so much; when 70° , so much. Mr. Taylor suggested that it was something like Captain Cuttle's watch.

Mr. C. E. Hopkins, was present for the purpose of exhibiting to the members specimens of Omega sensitized paper, and demonstrating the toning of prints made on that paper. Before doing so he exhibited a new shutter, called the "Pneumo." The shutter, which was of the rotary type, could be placed either outside or inside the lens, and instantaneous or time exposures could be made at will. He claimed there was nothing liable to break or get out of order, and it was sold for a very low price.

Prints made on the Omega sensitized paper were next shown and toned by Mr. Hopkins. The paper is coated with a gelatine emulsion, and printed in sunlight, requiring about one-third less time than ordinary albumenized paper. A combined toning and fixing solution is sold for use with the paper, or a formula for preparing the same is furnished with each package. Unlike most ready-sensitized albumen

papers, a satisfactory black tone can easily be obtained when desired, or by stopping the toning at an earlier point warmer tones are obtained. The print should be made considerably darker than the finished tone desired, and immersed in the toning solution without first washing, being left therein until the desired tone is obtained, and then well-washed in several changes of water. They may be mounted directly after washing, or can be hung up to dry or laid face up on blotting paper, care being taken not to place anything on top of the prints till thoroughly dry, as it would adhere to the gelatine surface. The print can be glacé by squeegeeing them face down on a tin-type plate. It was claimed that the paper was more permanent than albumen paper, and would not fade if properly used.

Mr. Bell took exception to the toning and fixing in one solution; the prints so treated were going to fade. In the olden time they were taught to tone separately and fix separately, if they desired to get permanent prints, and the mixture of the gold and hypo together looked as if they were going back to the old fading time.

Mr. Hopkins said he had not found this to be the case. The prints in the sample book shown them had been made for over a year, and they were just as good now as when they were first made. Adjourned.

ROBERT S. REDFIELD, *Secretary.*

Lovers May Now Fasten Their Cuffs With Their Sweet-heart's Images.—A summer novelty is a cuff-button made to hold small photographs. To all appearances it is a plain, rectangular button, ornamented in enamel, but the top may be pushed to one side, revealing a place for a picture. This may also be moved in the opposite directions and in this way places for four pictures may be found. —*Philadelphia Record.*

A Royal Amateur Photographer.—The Princess of Wales, who is an experienced photographer, has sent a large selection of her best productions to the great international exhibition to be opened next month in Vienna, under the patronage of a fashionable club of amateur photographers, presided over by the Archduchess Maria Theresa. Under ordinary circumstances the Princess would have as competitors the Grand Duke Ferdinand, of Tuscany, and the Archduchess Maria Theresa herself; but it has been arranged that the numerous royal exhibitors shall all be *hors concours*. —*New York Tribune.*

Photographic Scissors and Paste.

Many leading French artists will not expose their paintings at the Chicago Fair. Now if it was Philadelphia, where it is alleged by some that pictures are too much exposed, an objection like this might hold good. But in Chicago!

The Russian photographers have a peculiar way of punishing customers who do not pay their bills. They hang out the pictures of such customers upside down. One of the Odessa dailies thinks that the photographers may be right in treating their delinquent adult customers in such a manner, but it regards it as wrong to expose to scorn the pictures of children ordered by parents who would not pay their bills.

Advice to Amateur Photographers.—A. Bogardus, in a recent article, gives the following advice to amateur photographers. He says: "If you would succeed in your experiments, let everything you use be the best of its kind. A poor camera-box and a weak lens will not give good results. Have the dark room and everything in it in perfect order. Use great care in every part of the process. Carelessness never succeeds. Do not be satisfied with any kind of an impression, because some ignorant person has told you are doing splendidly. If you are anxious to excel in photography learn to develop the negative and to print from it. Do not carry your plates to a professional to develop and print them for you. If you do, how much of the picture is your own execution? Anybody can put a plate in a camera and expose it. Do not attempt portraits of friends; they will find fault with them and laugh at you. Your sitter will not like his or her expression, and will say it is your fault. Use your plates to make landscapes or views. Do everything deliberately. Do not neglect to dust the plate before inserting it in the slide, or the picture will be spoiled by dust-spots. Learn to use a reliable plate, and do not change. Use one formula for a developer, and keep on doing so until you are master of it." The amateur photographer is finally exhorted to master whatever difficulties present themselves, and not to get discouraged.—*Press.*

At the monthly meeting of the Sketch Club a lecture was delivered by one Hermann Faber, on "Photography in Art," in which that individual attempted to emphatically deny the beneficial effect upon art of photography. "By a mechanical process we may procure

studies from life and of live objects without undergoing the labor of exerting our thoughts or of using the pencil and crayon to prepare such studies. He who saves the trouble of manual labor and mental studies of form loses at the same time the ready understanding and application of forms. Photography supplies us with studies of apparent reality,—apparent, for they are nothing but reflections, as in a mirror; momentary, and by which the mind is not moved by reflectors, as if streaming from a sketch or a picture by the artist. A continued study in art by photography tends to cripple the fancy, banish the ideal, blind the sound judgment of what is essential in art production, and become destructive finally of true art, which is emotional."

Can any of our readers inform us who Hermann Faber is?

A Spirit Picture.—An extraordinary phenomenon is reported by E. B. Farnham, of the village of East Thompson, among the hills of Windham county, in the extreme northeastern corner of Connecticut. Mr. Farnham tells this story:

"Three years ago last March a traveling photographer strolled into East Thompson taking pictures. Among others, he took a picture of the house of Mr. Windsor Bates, the postmaster of the town. The sole occupants of the house are Mr. Bates and his wife, who are people well advanced in life.

"The picture was taken showing the house, with Mr. Bates and his horse in front of it, and his wife sitting in the foreground. Here is the strange thing. In one of the windows appears the plain likeness of Mr. Bates's mother, who had been dead three years at the time the picture was taken. The only picture of Mr. Bates's mother known to be in the neighborhood at the time was in an album on a table in one of the rooms of the dwelling. The likeness in the window is on a pane that is at least six feet from the floor of the room. Mrs. Bates was a short woman. She died at the age of 95 years.

"As soon as the photograph was shown to neighbors every one who saw it pronounced it to be unmistakably a likeness of Mr. Bates's mother. Mr. Bates and his wife are sincere Methodists, and have no knowledge of or sympathy with Spiritualism."

The exiled Grand Duke Michael is about to utilize the skill he gained as an amateur photographer by opening a gallery by the Lake of Como. The idea of being taken by a Grand Duke is itself so taking that Michael may manage to make a living for himself and the wife for whom he sacrificed so much. While the Czar's displeasure lasts he has virtually no income.

Some Photographic Comicalities.

The new color photography, when applied to human beings, is reported to exhibit remarkable effects. Thus the photograph of a melancholy person looks blue, of a jealous individual green, and a bilious one yellow. The irascible folk "come out" looking black, the timorous white, and the apoplectic red. These facts alone should "give color" to the claims that are made for the new process.—*Funny Folks*.

A Wily Youth.—"I'm to have my photograph taken to-day," she said.

"Indeed," he replied. "May I beg one when it is completed?"

"Oh, I couldn't think of letting you have one."

"Well," he said, resignedly, "I'm sorry." Then he added: "There is one thing the photographer won't need to do when he is taking your picture."

"What is that?"

"He won't need to tell you to look pleasant, for you always look pleasant."

"Perhaps I may be able to spare you one," she said, after a pause.
—*New York Press*.

A Dog Worsts 160 Students.—The senior class of Yale University gathered on the steps of Osborne Hall to have a group photograph taken, as is the custom.

The photographer, after half an hour's hard labor, got the 160 men arranged so that the face of each showed plainly. Just as he was about to say "ready" Andy B. Graves, '92, appeared on the opposite side of the street leading his immense English bull-dog. Some one in the crowd yelled "seek him, Fido," and the dog, tearing from its master's control, rushed across the street, growling and snapping. The students scattered in all directions, leaving hats, pipes, and books lying in confusion about the steps. Some of them retreated to Durfee and others sought refuge in the New Haven House.

It was only by being literally carried from the steps of the hall by Mr. Graves that the dog could be taken from the scene of its victory. The dog is a famous one, and was exhibited at the recent show in New York.—*Exchange*.

She Wanted a Nice Picture.—A local photographer tells a story of a young man who came into the studio one day, and asked nervously if he might have a little conversation with him.

The visitor was painfully ugly, and, after some awkward blushing and indefinite allusions, he asked the artist if he supposed he had among his samples a picture of any young man who looked like him, but was better looking.

"What do you mean, young man?" asked the photographer.

"Well," replied he, making a clean breast of it, "I am just engaged to be married. The young lady lives out west. She is going home to-morrow. She says she thinks I am so good she doesn't mind my being homely, but she wants a good-looking picture to take home with her to show the girls."—*Boston Traveler*.

A Snap-Shot Picture.—The detective camera has proved its usefulness. It was employed by a bank clerk to take a picture of a woman in the act of getting change for a \$1,000 bill. This bill proved to be one stolen during a burglary, and the picture of the woman has led to the arrest of her husband and of his companions in the robbery and murder.

A Young Widow Lady desires reëngagement. Used to entire control of reception-room, books, correspondence, etc. Good spotter. Age 26.—Address M., 131 The Grove, Hammersmith, London, W.—*British Journal*.

A Camera in a Glass Eye.—A correspondent, who wisely omits to put his name thereunto, sends us the following: "Is it really true that a photographer who has a glass eye, which turns with the other one, occasionally replaces it by a small detective camera? I was told that he used to walk about with the eyelid closed, and when he saw a suitable object with his working eye, he opened the eyelid of the other in a moment and got the required exposure. But now he has added mechanism to the detective, and is liable to have the eyelid open, like other persons; and when he wants to photograph he just winks in a particular way, which sets some interior mechanism a-whirling, whereby, as soon as the eyelids are again open, an internal screen is removed and then replaced; and so the photograph is taken. He can change the detective for the glass eye, or vice versa, while he pretends to be sneezing with his handkerchief before his face. It is all too, too dreadful, but he must be ingenious."—*The Photographic News*.

In the Twilight Hour.

AFTER the glare of the noonday sun
Fades out, the glowing west
Reflects warm tints on the weary world,
And this after-light brings rest.

Dearest desires and golden dreams
Dazzle and glow in youth,
But the backward gleam of setting hopes
Lights up the soul with truth.

PRAISE undeserv'd is satire in disguise.
—*Smollet.*

IT is vain to be always looking towards
the future and never acting towards it.—
J. F. Bayes.

IT is easier to criticize others than to be
correct ourselves.
The world knows nothing of its greatest
men.—*Taylor.*

TEARS on the cheek of a repentant soul
are more precious in the eyes of God than
the pearls in the diadems that angels wear.
—*W. P. Bread.*

MATHEMATICALLY and financially it
costs more in money to be an average
sinner than it does to be an average Christian.—*J. G. Oakley.*

THE marvel of life in any case is too
great for us to grasp yet; probably it will
always remain in part an unsolved problem.—*J. T. Rothrock.*

IN Sparta it was a law that men should
worship the gods with as little expense as
possible. There are already enrolled on
the church books of the United States
enough such Spartans to make three thousand new Thermopylaes.

WHENEVER time prepares a fresh field
of conflict, and the hour of battle has
come for the battle to join between the
old and new, the stately form of the true

hero and leader never fails to stride to the
front.—*A. A. E. Taylor.*

THE world is yet in the twilight, doubtless, but it is the twilight of the breaking dawn, not the falling night. Despair of the world's future is disloyalty to God.—*G. B. Wilcox.*

ALL the Luthers and Wesleys who have
pioneered great reformatious, and all the
missionaries of Christ who have invaded
the kingdom of paganism, have had to
endure night watching and sleepless work
before God opened to them the gates of
morning.—*Theo. L. Cuyler.*

THE best thing to give to your enemy is
forgiveness; to an opponent tolerance; to
a friend your love; to your child a good
example; to your father deference; to
your mother conduct that will make her
proud of you; to yourself respect; to all
men charity.—*Mrs. Balfour.*

FROM care and sorrow, from the misapprehensions of our fellow-man, from the loneliness of the uncaring crowd, from the accusations of conscience, from the anxieties born of distrust, from the fears that lurk in the valley of death, and the shrinking that turns from a stranger eternally, the soul that sits in the shadow of the "Rock of Ages" finds deliverance.—*C. C. Salter.*

GOD might have made sin impossible. He might instantaneously wither every hand put forth to steal, and paralyze every lying or profane tongue; but He does not choose so to govern the world. He has allowed it to be easy and possible to sin. But He has given a conscience to every one, and a law for its guidance, and He makes it possible for us to do right, and manhood is developed, and character, by right convictions and chances bravely adhered to.—*ANON.*

SPECIAL NOTICE.

THE Photographers' Association of America will hold its convention at Buffalo, N. Y., July 14th to 17th. The Pennsylvania Railroad Co. will sell for the occasion tickets, Philadelphia to Buffalo and return, at one and one-third fare on certificate plan, that is, one full fare going and one-third fare returning. Tickets can be purchased July 11th to 14th, inclusive, good to return until July 20th. This will make the railroad fare amount to \$12.34 for the round trip. Trains leave Broad Street Station at 8.20 A. M., 7.03 P. M., 9.20 P. M., and 11.25 P. M. Arrive at Buffalo at 8.30 P. M., 7.30 A. M., 12.15 noon, and 5.25 P. M. Berth in Pullman sleeping car, Philadelphia to Buffalo, \$2.00 each. For further information apply to J. K. Shoemaker, Pass. Agt. Mid. Dist. Penna. R. R., southeast corner Broad and Chestnut Streets, or Thos. E. McCollin & Co., 1030 Arch Street, Philadelphia.

 RECENT PATENTS.

ISSUE OF MAY 5TH, 1891.

- 451,880—Photographic Shutter; C. C. Packard, assignor to E. & A. H. Anthony, New York, N. Y.

ISSUE OF MAY 12TH, 1891.

- 452,119—Photographic Camera; B. J. Edwards, London, England.
452,059—Calendar for Photographic Purposes; A. Leutner.

ISSUE OF MAY 19TH, 1891.

- 452,776—Support for Photographic Printing Frames; A. J. Dawdy, Goshen, Ind.

ISSUE OF MAY 26TH, 1891.

- 452,—Apparatus for Producing Instantaneous Photographs; W. Donisthrop and W. C. Crofts, West Minster, England.
452,926—Photographic Camera; M. Vega, assignor to Scovill & Adams Co., New York.
452,859—Photographic Stand; H. Vite, Berlin, Germany.
Amer. Jour. Photo.—June.—4.

AUSFÜHRLICHES HANDBUCH DER PHOTOGRAPHIE. By Dr. J. M. Eder. Press of Wm. Knapp, Halle, a.S. (May be obtained through any book importer.)

Part I., 147 pp., "History of Photochemistry and Photography," from Aristotle to the alchemists. Part II., 300 pp., "The Chemical Action of Light" (Photochemistry).

This important storehouse of information and reference, by Dr. Eder, is in reality an enlarged and improved edition of the work which appeared about eight years ago. It is without question the most comprehensive and complete work in photographic literature.

Part I. gives the early history of photography in a manner as it has never before been dealt with, and shows that Dr. Eder has spared no labor or research to make his encyclopædic work perfect in every department. Much new and fresh matter is given which has never before been placed before the general reader in connection with photography. The part before us is embellished with four portraits,—Nicephore Niepce, Daguerre, Fox Talbot, Dr. Schulze,—all in heliogravure, from the establishment of J. Blechinger, in Vienna; two wood-cuts of a negative and positive picture are also given in the text. The part closes with the discovery of Daguerre in 1839.

Part II. treats of the chemical action of light (photochemistry), spectral photography, photography in connection with climatic conditions, and actinometry. Three hundred pages, with one hundred and twenty-seven diagrams and illustrations printed in the text. To say that the work is exhaustive, hardly expresses the meaning which we wish to convey. This part is divided into seven chapters, which treat upon: (1) The chemical action of light, and its relation to heat and electricity. (2) The solar spectrum, and its chemical action. (3) The action of pigments and colorless mediums in relation to photography. (4) Light sensibility of the various photographic preparations. Necessity of a certain primary action of light in photography. Flashing before and after exposure. (5) Photography in connection with meteorological and climatic conditions. (6) Astronomical photography. (7) Photometry of the chemically active rays, and the testing of the sensibility of photographic preparations.

This work should be in the library of all photographers who have any knowledge of the German language, and we can truthfully say that we know of no work within the whole scope of photographic literature which is so conscientiously and carefully prepared, or is more encyclopædic in its character, than this new edition of Dr. Eder's copious handbook of photography.—J. F. S.

